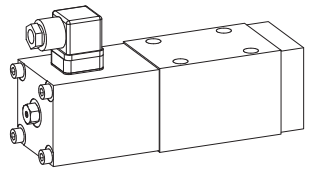
Proportional directional valve
- **not pressure compensated**
- **Q_{max} = 60 l/min**
- **Q_N = 50 l/min**
- **p_{max} = 315 bar**

NG10
ISO 4401-05



DESCRIPTION
Direct operated proportional spool valve in flange design NG10 acc. to ISO 4401-05 with 4 ports. The spool valve is designed to the 5 chamber principle. The volume flow is adjusted by a Wandfluh proportional solenoid (VDE standard 0580). Low pressure drop due to the body design and spool profiling. The spool is made of hardend steel. The body made of high grade hydraulic casting for long service life is painted. The cover and the solenoid are zinc coated.

FUNCTION
Proportionally to the solenoid current spool stroke, spool opening and valve volume flow will increase. Proportional directional valves NG10 are not load-compensated. The optimum spool shape and progressive characteristics curve allow fine motion control. To control the valve Wandfluh proportional amplifiers are available (see register 1.13).

APPLICATION
Proportional directional spool valves are well suited for demanding applications where high resolution, high volume flow and low hysteresis are requested. They are implemented in industrial hydraulics as well as in mobile hydraulics for the smooth control of hydraulic actuators.
Application examples: pitch control of wind generators, forest and earth moving machines, machine tools and paper production machines with simple position controls, robotics and fan control.

CONTENT

TYPE CODE
A PW ☐ 4 ☐ - 50 - ☐ # ☐

- International mounting interface ISO
- Proportional directional valve
- Control mode acc. to table 1.10-90/2
- Number of control ports
- Description of symbols acc. to table 1.10-90/2
- Nominal flow at 10 bar pressure drop over 2 metering edges = 50 l/min
- Standard nominal voltage U_N: 12 VDC G12; 24 VDC G24
- Design-Index (Subject to change)

GENERAL SPECIFICATIONS

Nominal size	NG10 acc. to ISO 4401-05
Designation	4/2-, 4/3-way proportional-control valve
Construction	Direct operated spool valve
Mounting	Flange, 4 fixing holes for socket head cap screws M6 x 65
Fastening torque	M_D = 9,5 Nm (screw quality 8.8)
Pipe connection	Connection plates, Multi-station flange subplate, Longitudinal stacking system
Mounting position	any, preferably horizontal
Ambient temperature	-20…+50 °C
Weight: 4/2-way	m = 4,3 kg
4/3-way	m = 5,7 kg

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, class 18/16/13 (Required filtration grade ß 6…10≥75) refer to data sheet 1.0-50/2
Viscosity range	12 mm²/s…320 mm²/s
Fluid temperature	-20…+70 °C
Working pressure	p_{max} = 315 bar (connections P, A, B)
Tank pressure	p_{max} = 160 bar (connection T)
Nominal volume flow	Q_N = 50 l/min (Q_{max} = 60 l/min) at 10 bar pressure drop over 2 metering edges.
Leakage volume flow	on request
Hysteresis	≤ 5 % ∗

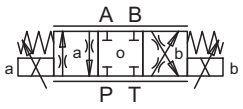
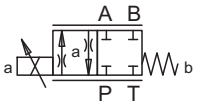
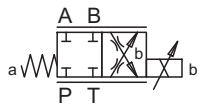
∗ at optimal dither signal

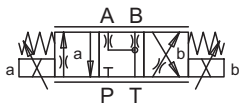
ELECTRICAL SPECIFICATIONS

Construction	Proportional solenoid, wet pin push type, pressure tight.	
Standard-Nominal voltage	U = 12 VDC	U = 24 VDC
Limiting current	I_G = 2300 mA	I_G = 1150 mA
Relative duty factor	100% DF (see data sheet 1.1-430)	
Protection class	IP 65 acc. to EN 60529	
Connection / Power supply	Over device plug connection to ISO 4400 / DIN 43650 (2P+E)	

Other electrical specifications see data sheet 1.1-155 (PI60V)

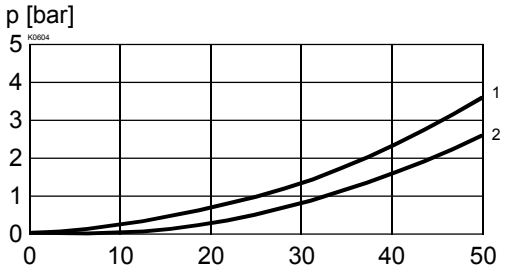
TYPE CHARTS / DESIGNATIONS OF SYMBOLS

	S 4 D101 S = Symmetrical control mode
	S 4 Z101a S = Symmetrical control mode
	S 4 Z101b S = Symmetrical control mode

	V 4 D102 V = Meter-in control mode

CHARACTERISTICS oil viscosity υ = 30 mm²/s

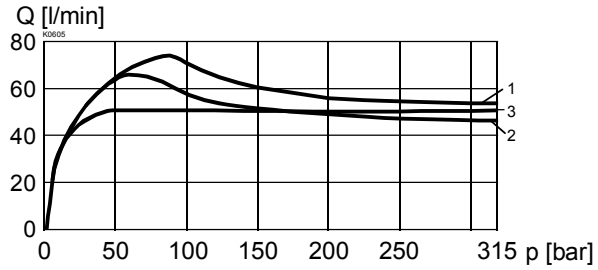
$\Delta p = f(Q)$ Pressure loss/flow-characteristics over 2 metering edges



1 APWS4.101 P-A / P-B
APWS4.101 B-T / A-T
APWV4.102 P-A / P-B

2 APWV4.102 B-T / A-T

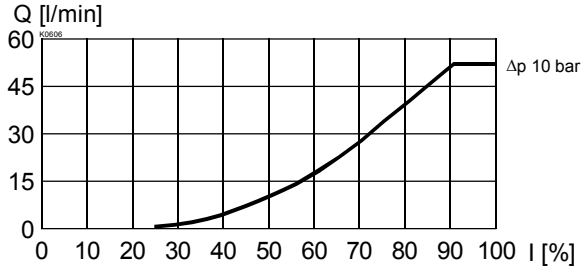
$Q_L = f(p)$ Volume flow-pressure-characteristics



1 APWS4.101
2 APWV4.102

3 mit 2-Wege Druckwaage UZFSA10
(siehe Datenblatt 2.5-860)

Q = f (I) Volume flow-signal-characteristics



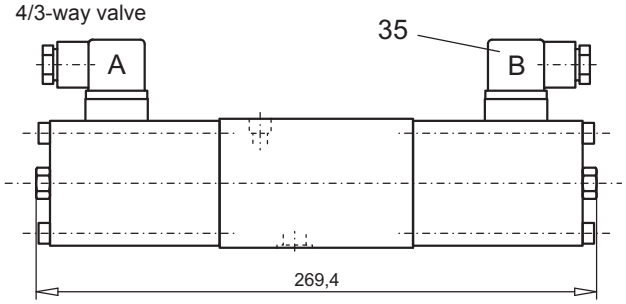
ACCESSORIES

Sub-plates	Register 2.9
Proportional-amplifier	Register 1.13

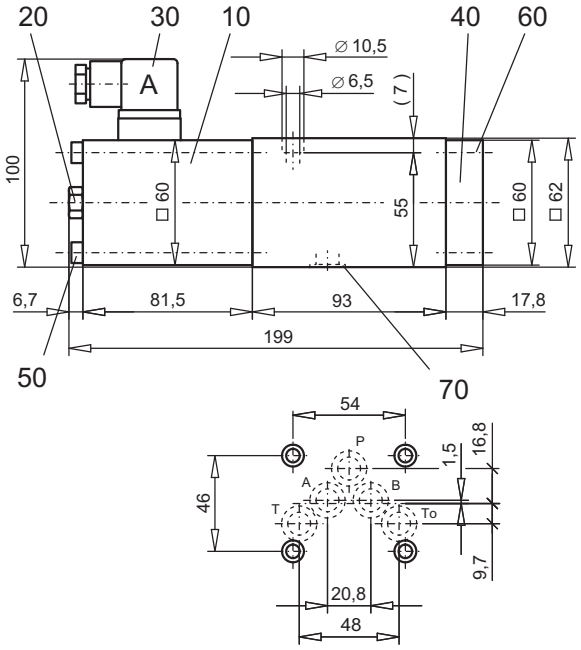
Technical explanation see data sheet 1.0-100

DIMENSIONS

4/3-way valve



4/2-way valve



PARTS LIST

Position	Article	Description
10	256.5454 256.5418	Proportional solenoid PI60V-G24-M40 Proportional solenoid PI60V-G12-M40
20	253.8002	Plug with integrated manual override HB8,5
30	219.2001	Plug A (grey)
35	219.2002	Plug B (black)
40	059.2205	Cover
50	246.3190	Socket head cap screw M6 x 90 DIN 912
60	246.3121	Socket head cap screw M6 x 20 DIN 912
70	160.2140	O-ring ID 14,00 x 1,78